

REMARKS

Claims 1-20 were examined and rejected. Claims 1-17 were rejected under 35 USC § 112, ¶ 2. Claims 13, and 16-20 were rejected under 35 USC § 103 as being unpatentable over USP 6,402,946 to Spraul et al., a reference with a filing date of 26 October 2000. Claims 1-12, and 14-15 were rejected under 35 USC § 103 as being unpatentable over Spraul '946 and further in view of EP 0495255.

A. THE PENDING CLAIMS ARE NOT INDEFINITE

Applicants have amended claims 1-20 to make clear that applicants are not claiming the liquid chromatography setup with which the present invention may be practiced.

Amended claims 1-12 are directed to post-column analysis system that is used with a liquid chromatography setup ("LC setup) to increase the elution time of chromatographic peaks that can be detected with the LC setup. In amended claim 1, the post-column analysis system is defined as including a micro switching valve unit and a secondary pump system. Applicants do not understand the Examiner's comments to the effect that in original claim 1 the micro switching value and the secondary pump system "are not even operatively coupled". The micro switching valve was recited to be in fluid communication with the eluent in the LC setup and could switchably control the rate of eluent flow therein. More specifically when the micro switching valve was in a first position, eluent flowed at a first flow rate to the post-column detector in the LC setup. Further, when the micro switching valve was in a second position, a slower rate of eluent was caused to flow to the post-column detector in the LC setup. The secondary pump system was stated to be coupleable to a portion of the micro switching value unit so as to contribute to the decreased eluent flow rate when the micro switching valve was switched (to the second position) to cause a decreased chromatographic column eluent flow rate (in the LC system). So interconnected, the post-column analysis system advantageously pumps eluent retained in a portion of the micro switching valve into the post-column detector. The desired result is that individual detection peaks flow more slowly into the post-column detector, which increases elution time for the chromatographic peaks.

Nonetheless applicants have amended claim 1 to more clearly define the present invention, namely a post-column analysis system that is useable with an LC setup, for the purpose of increasing elution time of chromatographic peaks to be detected with a post-column detector in the LC setup. Amended claims 2 and 3 recite that the post-column analysis system further includes, respectively, a control unit, and a primary pre-column pump. Dependent claims 4-12 have been amended to improve readability and to conform more consistently to nomenclature now in amended claim 1.

Amended claims 13-17 are directed to a post-column analysis system that is usable with a liquid chromatography setup to improve detection by reducing flow rate of detection peaks into the post-column detector, thereby increasing elution time for the chromatographic peaks.

Amended claims 18-20 are directed to a method to increase elution time of chromatographic peaks in a post-column detector found in a liquid chromatography setup.

Applicants submit that amended claims 1-20 overcome the Examiner's objections based upon indefiniteness. As to applicants's use of performance characteristics in describing the claimed elements, applicants submit that such limitations are permissible and can be used to distinguish the presently claimed invention over the prior art. By way of example, claim 5 recites certain characteristics of the liquid chromatography setup with which the present invention can function. Other post-column analysis systems, if any there are, may be incapable of functioning with such liquid chromatography setups, and thus claim 5 (and indeed claim 9) are proper claims, even though the liquid chromatography setup is not itself being claimed.

B. SPRAUL '946 IS NOT A VALID 35 USC § 103 REFERENCE

Spraul '936 was cited as a 35 USC § 103 reference against claims 13, and 16-20. But application for Spraul '946 was made on 26 October 2000. The presently pending application was filed 3 October 2001 but claims priority to U.S. provisional patent application serial no. 60/237,588 filed 3 October 2000. As such Spraul '946 does not qualify as prior art against claims 13, and 16-20, inter alia, and must be withdrawn as a prior art reference.

Applicants also note that Spraul '946 relies upon delay lines used as sampling loops to store the chromatographic peaks. By contrast in the presently claimed invention, the chromatographic peaks advantageously remain stored in the chromatographic separation column, an environment that is packed with appropriate media to trap components and avoid dispersion of the peaks. Further in small nanoliter peak volumes, Spraul's use of delay lines is counter-indicated.

C. SPRAUL '946 COMBINED WITH EP 0495255 DO NOT RENDER CLAIMS 1-12, 14 AND 15 UNPATENTABLE

As noted above, Spraul '946 must be withdrawn as a prior art reference. EP 0495255 was authored by applicant Jeran-Pierre Chervet's herein. EP 0495255 discloses flow

splitting but otherwise has no relevance to the presently claimed invention. Indeed if the presently claimed invention were obvious to author Chervet, it would have been disclosed in EP 0495255 in the year 1991.

Simply stated, EP 0495255 alone (or indeed in combination with Spraul '946) does not render claims 1-12, 14, or 15 unpatentable.

CONCLUSION

Amended claims 1-20 are patentable over the art of record and should be passed to allowance at this time.

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The Commissioner is authorized to charge any additional fees that may be required, including extension fees, or credit any overpayment to Deposit Account No. 50-2319 (Our Order No. 465377-01023 [A-70881/DJB/MAK]).

Respectfully submitted,
DORSEY & WHITNEY LLP

By: Michael A. Kaufman
Michael A. KAUFMAN
Reg. No. 32,998
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Four Embarcadero Center - Suite 3400
San Francisco, California 94111-4187
Tel.: (415) 781-1989
Fax: (415) 398-3249

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